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4. "On the gaseous transformation of Water, by means of a pile in two separate compartments having no other electric communication between them besides conducting wires of copper, and giving, in the one oxygen alone, and hydrogen alone in the other." By M. Daniel Paret. Communicated by Thomas Bell, Esq., Sec. R.S. &c.

After premising that, at the present time, it is the generally received opinion that water is a compound of oxygen and hydrogen, the author states that he now brings forward an experiment which proves, not that water is a compound, but really a simple element, the generator of oxygen and hydrogen, since, without being decomposed, a volume of water being given, it may be entirely transformed at will, either into oxygen or into hydrogen. Thus, he considers, it is no longer a decomposition of pre-existing elements which is effected, but really a gaseous transformation into two "sub-elements" which are formed at the expense of the water, by the transposition of its combined or coercitive electricity which places itself in excess in the water which becomes oxygen, at the expense of another volume which becomes hydrogen. He considers that this will, no doubt, appear very extraordinary, but that nevertheless it is now "un fait accompli et acquis à la science."

After describing the experiments which he considers support his doctrine, the author concludes by observing that these experiments prove,—1st, that contrary to the indefensible theory, a compound electric fluid which is decomposed and recomposed, there is a true transfer of fluid in the current, which besides would be sufficiently evident by its motive power. 2nd. That the electric fluid is really the coercitive agent of cohesion. 3rd. That water is not a compound, is not an oxide, but truly a first element, the generator of oxygen and of hydrogen. 4th. In fine, it reveals a power unknown until now, and that very likely many other bodies are in the same case as water.

In a second communication the author states that he had occasionally met with some anomalous results on repeating his experiments, and then points out how these are to be obviated.

January 31, 1850.

LIEUT.-COLONEL REID, R.E., Vice-President, in the Chair.

The following papers were read :—

1. "An account of a remarkable Aurora Borealis seen at Montreal on the 13th of August 1849." By Mr. Thomas McGinn. Communicated by Thomas Bell, Esq., Sec. R.S., &c.

The author having witnessed a singular aurora on the 13th of August, in this communication gives a description of the phenomenon. He states that, on the evening in question, the whole northern hemisphere was screened by thick dark clouds, which, though very small, were closely packed together. Shortly after sunset (7<sup>h</sup> 34<sup>m</sup>) it became quite dark, and at 8 o'clock the existence of the

meteor was indicated by a mellow luminous tinge which appeared through the openings of the clouds in the north.

About half-past eight a similar luminous glow was observed through the clouds which were fast disappearing in a heavy dew. This light appeared like a belt of  $2^{\circ}$  broad, extending across the sky from a point almost due east directly to the west, and reaching within  $5^{\circ}$  or  $6^{\circ}$  of the horizon. As the clouds disappeared, which they did very rapidly, the true character of the aurora became more perfectly developed. In the north the usual dark arch from which the columns of light ordinarily appear to issue, was for the greater part of the time wanting; and the luminous columns seemed to rise from the earth, extending upwards occasionally to the pole star, beyond which no trace of them was visible. A brown vapoury cloud, the only one now visible, extended along the horizon from N.N.E. to a few points south of east, and maintained apparently a motionless position, the lower part appearing to rest upon the earth, and the upper edges, which seemed uniform, rose about  $6^{\circ}$  above the horizon. Immediately in the east, and apparently issuing from this cloud, rose the belt or zone of light already noticed, forming a magnificent arch. The light emitted from this zone was of a milky whiteness, and the matter of it seemed to be much more compact than any portion of an aurora ever seen by the author; but immediately in the zenith, where it intersected the Milky Way, it appeared to be far less compact. At this point, where alone motion was observable, a constant current was seen, presenting the appearance of light fleecy clouds driven by a strong wind, and following each other in such close succession as to appear in contact. This stream of the aurora was maintained undiminished for more than an hour, during which time the eastern part of the zone did not appear to lose either in volume or brilliancy, nor did the western seem to gain in either of these respects. After an hour, the dark cloud seemed to diminish slowly, and with it the zone began to lose its brilliancy. In about another hour this cloud and also the zone, which throughout had maintained apparent contact with it, vanished. The conclusion, that the dark cloud served the purpose of a conductor and fed the zone drawing off the matter of the aurora from the north, seemed to the author inevitable. The cloud did not appear to him to be more than forty or fifty miles distant. In conclusion he remarks that none of the prismatic tints were observable on this occasion.

2. "On the Development of the Retina and Optic Nerve, and of the Membranous Labyrinth and Auditory Nerve." By Henry Gray, Esq., M.R.C.S. Communicated by William Bowman, Esq., F.R.S., &c.

The author has divided the observations contained in this paper into two parts:—the first of which treats of "The Development of the Retina and Optic Nerve; the second, of the Development of the Membranous Labyrinth and Auditory Nerve."

In the observations on the development of the retina, which have